

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: Doug Hendricks <ki6ds@dpol.k12.ca.us>
Subject: [6603] "38 Special"
Message-ID: <1.5.4.16.19961217130004.294feafe@telis.org>

Whew! What a relief. The "38 Special" design is done. Hundreds of hours have gone into this project by people who are doing it for the love of the hobby, because it is fun and because they like to help others enjoy the hobby.

Ori Mizrahi-Shalom is a genius. When you see the radio that he has designed for \$25, you are not going to believe it. This radio has the following features: Superhet receiver, sidetone, offset, crystal filter, VXO tuning that covers 20 kHz. and 300 mW of output in the stock version. The kit has 100 parts in it. Plus, it has pads and traces for the following mods and improvements: 5 Watt power amplifier with parts from Radio Shack!, RIT, on board keyer using the TiCK keyer (available from Embedded Research for \$5), and an improved crystal filter. The board is double sided, plated through, soldermasked with silkscreen. The receiver is very good, Paul Harden NA5N has been sent a proto kit and is going to report back to us the results. But, two of the receivers have been measured for mds, and the results are outstanding. I will not report them now, as we want an independent source (Paul) to give us the figures.

The kit is fun to build. It took me about 5 or 6 hours, and I took my time to enjoy it. It aligns very easily, just two simple adjustments, and you are on the air. It is small in size, 3" x 4" for the board, and will be a natural for backpacking this summer. Maybe the neatest thing about this kit is that it does not come with connectors, controls or case. You can design your own and have it as trail friendly as you like.

But what I want to say in this posting is that Ori and Dave Fifield have been wonderful to work with, and have given up a lot of time to contribute to the club. Dave is in the middle of remodeling his kitchen, yet has taken out time to help with many tests of the circuits in the "38 Special". This is a true radio that was designed to be a hacker's delight. It is not a toy. It works great, and if you do the Keyer, RIT, and Power Amp mod, you will have a rig that will work great for portable use. This one will get you lots of contacts. Thanks guys for all of your efforts. NorCal members throughout the world appreciate your efforts.

Jim Cates. What a guy. He is the unsung hero of this project. Jim stays in the background, avoiding the limelight whenever he can. Yet he is a true warrior when it comes to working. We have received 338 orders for kits in two weeks. Can you imagine how much mail that is? I can't. Jim has to write down every order in the order book, plus he will usually notify by email those who request notification that he has received their order. Then, Jim has to get all of those checks ready for deposit, putting them in order by amount, and writing each check down on the deposit slip. The clerks at the Credit Union all groan when he walks in the door. Jim told me that he puts in at least 4 hours per day for NorCal paper work. Amazing. And, he is so polite and nice to everyone, nothing ruffles his feathers.

We are ordering 500 boards for the first run. And yes, we will do more kits. The fact is that all 338 orders were generated by the internet, either through qrp-l or the NorCal page. The articles have not even been published yet in QRPP and QRP Quarterly. We expect another avalanche of orders then. This list is truly setting a wonderful example for others to follow. Your response to this project is very gratifying.

There have been a couple of postings asking for information on the extra parts needed and the parts needed for the mods. We have been getting the design finalized, and now we have some time to post the info on the parts you will need to supply. Only Jim is retired on the "38 Special" crew, Ori, Dave and I all have day jobs. We are all married, and Ori and Dave have young children at home. But, the information will be coming.

Ori and I will start writing the manual very soon. It will be done before we get the boards so that we can test it with one of the kits before we send out the manual. (I learned my lesson with the Cascade on that one.) Thank you to Ori, Dave and Jim, we did it. 72, Doug, KI6DS

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: "Craig O. Smith" <CSMITH@cmsuvmc.cmu.edu>
Subject: [6608] "38 Special"
Message-ID: <961217.151618.CST.CSMITH@cmsuvmc.cmu.edu>

Sorry to send this to the group - Please ignore....

I was attempting to send an e-mail to Doug/KI6DS but was unable to get through...

So, If Doug happens to read this.. Please catch me up on this new KIT - "38 Special", as I am new to the group and have not a clue what it is all about...

TIA Doug..

73s/Craig/KB0VRS - Warrensburg, Mo Where "If you don't like the
weather, wait 30 minutes,
it will change!"

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: n4so@juno.com
Subject: [6550] "TRANSMISSION LINE TRANSFORMERS"
Message-ID: <19961216.223947.5215.1.N4SO@juno.com>

sevick.txt

From: "Tardette, Lisa" <ltardette@arrl.org>
Subject: RE: TRANSMISSION LINE TRANSFORMERS
REF: Jerry Sevick's book "Transmission Line Transformers" no longer published or sold by ARRL.
Here is the answer from pubsales@arrl.org

Dear Mr. Brown,
We do not publish the "Transmission Line Transformers". Please contact Noble Publishing at phone 770-908-2320 or fax 770-939-0157. They now publish this title.
Sincerely,
Lisa Tardette
Pub. Sales ARRL

nnnn

Ken Brown , N4SO
QTH: Nr Mobile, AL
QRP-L #622
n4so@juno.com

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: "Jeff M. Gold" <JMG@tntech.edu>
Subject: [6582] 38 special additional parts
Message-ID: <01ID4170RZDU8WW9VE@tntech.edu>

Boy,

those Norcal people are doing it again...can't wait to build the 38 special.

anychance of one of you most wonderful people involved in the project doing a short list of additional parts, sources for the rig.

I would love to have the parts for the Rit and amp and keyer when I build the kit.

thanks for all your work, I know each of us really appreciates it.

72
Jeff, AC4HF

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: GREGOIRE@endor.com (ERNEST GREGOIRE)
Subject: [6607] Brag ALERT, This is not a test!!
Message-ID: <199612172109.QAA157116@nss2.CC.Lehigh.EDU>

Hello Gang,

Go ahead, ask me.

Just ask me how I came into possession of 2 very beautiful
New Zealand stamps?

Well I'll tell you.

I have just received a very nice QSL card from the ZL8RI DX-pedition.

The place was Kermadec, Raoul Island to be exact, WOW.
(applause)

I can't wait to rib this card under the nose of a certain QRO guy
at my local club. He tried to bag this one and failed using 400 watts.

I bagged it with 1 watt, SSB, on 15 meters using cunning and stealth.

OH God!!, How I love ham radio and QRP.

de AA1IK N.E.-QRP-C. #202 (Lead by example, It is better to)
 QRP-L member #95 (pull a string than it is to push it.)
Ernie Gregoire FISTS #2644
RR 1 Box 221
Canaan, NH. 03741

New England QRP Club, information
available on request by sending me a
S.A.S.E. or via E-mail.

e-mail : GREGOIRE@ENDOR.COM
packet : AA1IK@WA1WOK.FN43FE.NH.USA

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: adams@chuck.dallas.sgi.com (chuck adams)
Subject: [6595] CA beats TX
Message-ID: <199612171737.RAA26973@chuck.dallas.sgi.com>

It may be that TX got beat by the CA gang,
but Jack my have set a record for a one night
string of contacts. Or did Smitty do 80?

dit dit

SIG

Chuck Adams (K5FO CP-60) WAS 40m/30m/20m=49/49/50

EMPS QS0s=109 STATES(w/c)=34/2 DX=0

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996

From: launerb@crl.com (William H. Launer)

Subject: [6548] Colorburst Freq. TVI

Message-ID: <v01530505aedb9efbf6d5@[192.0.2.1]>

Gang,

I've been experiencing bad interference on the colorburst frequency (3.579). Through a process of elimination, I isolated a Magnovox tv connected to cable as the primary offender. In addition to noise on 80 meters, when I keyed the transmitter on the frequency (at 100 w), the colors blinked on the tv. I disconnected the cable, and the 80m interference was unchanged, so it was either from the tv power cord, or radiation from the set itself. On a "parts gathering" expedition at Gateway Electronics, I found a bin full of "snap-on" split toroid ferrite filters (about 1.25" long, and .375" diameter) for \$1.85 each. The hole through the core was just large enough to allow the power cord to pass through twice (a 1-turn coil). Went back to the rig, and the noise is almost completely gone. I keyed the transmitter, with my resident video evaluation engineers (read wife and daughter) monitoring - the result: no interference! Next time I'm at Gateway, I'm going to get a handful of these things, and routinely put one on each tv set in the house. Easiest tvi case I've ever solved!

Merry Christmas, and Happy New Year.

72/73 Bill wb0cld

Bill Launer

St. Charles, MO

launerb@crl.com

wb0cld@wb0cld.ampr.org [44.46.66.25]

qrp-l #279 qrp arco #3551
Grid Square EM48RT

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: "OHR" <ohrqrp@netonecom.net>
Subject: [6609] Connector Survey
Message-ID: <199612172141.QAA11444@netone.netonecom.net>

Hello All,

We would appreciate receiving some input from the group on the subject of RF and audio connectors. Specifically, do you prefer BNC or SO-239 type RF connectors? On connectors used for headphones, do you prefer 1/4" or the smaller 3.5mm type? Please e-mail us direct at <qrp@ohr.com>.

We would like to wish everyone a Merry Christmas and a safe and happy New Year.

73,
Dick and Cathy Witzke
Oak Hills Research

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: NZ8J <timcook@erinet.com>
Subject: [6545] Dummy Loads
Message-ID: <32B5FAD3.2904@erinet.com>

Found a source for a few real nice dummy loads. they were \$20 each, Military Surplus new in sealed packages. They are supposedly good from hf to over 1 GHZ at 100W. Only one drawback is that they have a "c" type connector (looks like a large BNC). I am told that these connectors are available. The dummy load is about 3" square, mostly fins. Nomenclature is , Dunny Load, Electrical DA-437/GRC-103 (V), made by RCL electronics. They were tested by a local ham with access to some good test equipment. Jim KB8NN, had a few of these left as of Sat morning. his email is: kb8nn@erinet.com

Good luck, and if anyone has some of these "C" connectors packed away, I could use one.

Thanks
Tim

NZ8J

NOT RESPONSIBLE FOR ANY TRANSACTIONS AS A RESULT OF THIS POSTING, JUST
WANTED TO PASS ON WHAT I THOUGHT WAS A GOOD DEAL.

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: tart1@juno.com (Nathan C Tart)
Subject: [6578] E-MAIL REMAIL SERVICE / AMSAT.ORG MAIL ALIAS SVC
Message-ID: <19961217.100814.4751.4.tart1@juno.com>

There is a lot of mail coming and going about
changing e-mail addresses and not being happy
with providers.

There are some alternatives to this problem of forever changing e-mail
addresses. The remailers who charge you are fine if they make you happy.

Amsat has a service that is free to all hams and it does not cost
anything. Your address will have an alias (your call@amsat.org) just that
simple.

The remailing service allows each user to receive mail sent to the
address callsign@amsat.org
, where callsign is that hams callsign or other
unique identifier. Mail sent to that address will be routed to the
amsat.org host at HREF="<http://infopath.ucsd.edu/>">UCSD in San Diego, then
remailed from amsat.org to the network address specified by the user.

In most this process delays the message by only a few minutes.

To obtain a mail alias on AMSAT.ORG send a message with your request
to:
listserv@amsat.org

Be sure to include your callsign and correct email address. Your
request will be processed manually, for now, so the format of your
request is not important.

NOTE: You do not need to be an AMSAT member to
obtain an alias.

This info came from <http://www.amsat.org> and printed in a ham club paper
by KC400Z. I tried it,
I use it, and it works fine for me. Many thanks to
OLD ED KC400Z.

Further I use juno e-mail service there is a
little trick. Install the software get on line
and working. Second delete the software from the harddrive then reinstall
it. When you first go on juno sends you the advertisements. When you
delete
the program the ads go. When you reinstall the software the
advertisements are gone and do not come

back.

First now before we clutter up the net with challenges etc. I have only repeated what I have tried and know that it works.

IT WORKS FOR ME--- TRY IT.

73
AC4GT

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: "William R. Colbert" <v31xe@dzn.com>
Subject: [6558] fox
Message-ID: <32B63773.2CE5@dzn.com>

Just want to say that Jack, W5TFB, really had a good fox hunt going, actually for a while it sounded like a swarm of bees. Good going Jack and I enjoyed listening to you work the fellows (after our qso). CU soon.

--

72/73, Ray Colbert, W5XE, SOWP 1064M
(also af852@rgfn.epcc.edu)
El Paso, Texas

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: Stew Whitehouse <76443.501@compuserve.com>
Subject: [6575] Fox and DX.
Message-ID: <199612170904_MC1-D43-E4F6@compuserve.com>

Hi folks,
Almost forgot to work the fox last night, thinking the chase was tonight instead. Luckily I glanced at the schedule and saw that W5TFB/fox was already dancing around his den! Turned the rig on about 0240Z and tuned around 7038 and sure enough there was Jack, loud and clear and calling CQ! One shot and bagged him...piece of cake! [by the way Jack, you came back to me just about zero beat to my offset - were you using a 49'er? :-)]

Well, this fox was just too easy so I switched to 30 meters, and heard LZ1TT (Bulgaria) calling CQ. First call got a QRZ? second call got a 449 from Val before I lost him! Never got to tell

him I was only running five watts to my trusty R7 Vertical fox getter.

Also finally received a QSL card from the ZL8RI operation [Kermadec Island Group], that took place last May. Same trusty R7 fox getter but had to crank the OMNI up to 100w to break that pile-up!

What's the point? Just a good day in Ham Radio Land.

72/73 Stew, ke4yh
Dunedin, Florida

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: SYDV00A@prodigy.com (FLOYD SMITHBERG)
Subject: [6563] Fox for Dinner
Message-ID: <199612170416.XAA15636@mime4.prodigy.com>

Almost missed this one! Had to go to xyl's Brit Club xmas dinner party at 0030Z and was sure I wouldn't get away before the Fox did. Soooo, I set up the Scout in the car on 7038 with the Hustler ant and hoped I could slip away for a few minutes and nab him. At 0230 there were no signs of the party breaking up, so I excused myself and headed for the car parked just outside the door with a clear shot to the east. No problem finding Jack the Fox...BIG pileup. Called several times...nada. Then heard compatriot NQ7K work him and tailed in right afterwards and got the contact. Luckee me. Thanks Jack, you really did a super job....

73,
Floyd NQ7X Phoenix ScQRPion dm33uq

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: Monte Stark <ku7y@sage.dri.edu>
Subject: [6554] FOXed
Message-ID: <Pine.SUN.3.90.961216195011.25802B-1000000@vortex.sage.dri.edu>

Hi All,

Well, Jack kinda hid under some noise for a bit, but then I heard him again after dinner. Set the filters, got him a good q5 and tossed out my call.....bingo....he bit!

Good job Jack. (But is it 282 or 288???) :-)

cul,

73, Ron,

.....KU7Y.....ARCI #8829.....Monte "Ron" Stark.....
....ku7y@sage.dri.edu.....Washoe Lake, Nevada....
....QRP-L #17...ARS #49...NorCal #330.....NRA LIFE.....

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: "Len W. Touth" <len@infinet.com>
Subject: [6571] Frequent Email Changes - Solution
Message-ID: <199612171133.GAA22760@mail1.infinet.com>

Hi Gang:

Just an FYI to the group.

I see a lot of postings notifying of email address changes. One solution is to use a personal email forward service. One such service is KEY.COM (www.key.com). For a minimum fee (I think 12 dollars per year) you get an address with key.com - I use kg8sf, my call. That becomes your permanent email address. Since it is only a permanent forwarding service, and not a provider, you can change email addresses to your heart's content without having to notify anybody but key.com of your new provider email address. I am sure there are many forwarding companies out there. Check them out.

Hey, just a thought.

Best 72/3

Len

KG8SF

len@infinet.com

kg8sf@key.com

QRP-L # 841 CQrp # 2 ARCI # 9025 FISTS # 2134

CHARTER MEMBER - THE COLUMBUS QRP CLUB - CQrp

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: Scott Rosenfeld NF3I <ham@w3eax.umd.edu>
Subject: [6579] FS: S&S Ark 20, Ten-Tec Scout power supply, 80m module
Message-ID: <Pine.3.89.9612170949.A20294-01000000@w3eax.umd.edu>

1) S&S Ark 20

S & S Engineerings deluxe rig- has synthesized tuning, 600 Hz filter, audio filter, variable output to 4 watts, QST review available if you provide your fax number. Built in keyer and speaker. Goes for \$399 new and assembled, asking \$275, interesting trades considered.

I have worked lots of DX with this 20 meter CW rig, now have too many rigs...

Also have a 20 meter Ramsey linear that puts out 15 watts with 2 watts in that goes with the ARK 20. This 40 dollar item is yours FREE with above purchase.

2) Ten-Tec 937 Scout power supply, 11 amps, matching NON-SWITCHING supply. NEW condition, \$80 new, asking \$65.

3) Ten-Tec 80m module, excellent cond. with original bag. \$25 shipped.

* Scott Rosenfeld NF3I Burtonsville, MD FM19mc QRV 80-10/6/2/440 *
*** 6m 75 grids worked on 8 watts *** HF 138 cfmd * QRP-L #147 ***
** QRP ARCI #9054 ** DXCC/WAS/WAC *** 100% dipole powered HF/6m **
* 301-549-1022 h / 301-982-1015 w *** 145.490- 147.225+ PL 156.7 *

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: Marshall Emm <75230.1405@compuserve.com>
Subject: [6540] Island Memory Keyer Kit
Message-ID: <961217000656_75230.1405_HHB68-1@CompuServe.COM>

Re our announcement that Milestone will sell Chuck's Island Keyer kit, there is now an IMAGE of the completed board on the web site. It wasn't a real good photo to start with, and it was my very first attempt at scanning, but at least it will give you the idea [g].

The url is <http://www.mtechnologies.com/mthome> the look for the electronic kits link. The image is at the bottom of the keyer page.

73

Marshall
AA0XI

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: Marshall Emm <75230.1405@CompuServe.COM>
Subject: [6594] Keyer Kit: Web Address Correction
Message-ID: <961217173301_75230.1405_HHB25-1@CompuServe.COM>

The posting on the Island Memory Keyer Kit contains an incomplete\url for the web site. If you just go to www.mtechnologies.com you get the service provider with no apparent way to get from there to the Milestone Tech page.

Correct URL is <http://www.mtechnologies.com/mthome>

Sorry for any inconvenience.

73
Marshall
AA0XI

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: ji3m@maxwell.com (James R. Duffey)
Subject: [6596] Loop Performance vs. G5RV Performance
Message-ID: <v02130500aedc69b3211b@[192.31.66.229]>

Kelly - Jim Here - In your post of Dec 15; you described your loop;

"=8A 282 ft loop. The top wire is up at least 50 feet and the bottom is about 5 ft off the ground. =8A the G5RV beats the loop by 1 to 2 S-Units on receive. Is there way to make this a better antenna?"

Without more specifics it is hard to make definitive (read correct!) comments, but that has never stopped me before :-).

You don't state the shape of the loop, but since you say you are feeding it at a corner, I assume that on 80M you are using a square or rectangle in the vertical polarization mode. If you are making your comparisons on 80M a horizontally polarized antenna such as the G5RV should probably be stronger on close in signals, say out to 700 miles, where its high angle of radiation is superior, and the vertical loop should be better for distance signals, say 900 miles or greater, where it's low angle of radiation should be better. On 40 M the primary radiation from the loop will be off the ends and it should be significantly down from a G5RV in the same plane. Above 40 M the loop pattern will have many lobes, some at high angles of radiation and a smaller antenna would be better.

I would say off hand that your problem with the loop compared to the G5RV are ground losses, which will probably be significant with the bottom end only 5 feet from the ground. You did not state the shape of the loop, but if it is a square or rectangle with a substantial length parallel to and only 5 feet from the ground, ground losses will certainly be significant on 80 M. You may or may not have feed line radiation as well which can be in an undesired direction, straight up, and cause additional losses when a comparison test is run.

If I were you, and I wanted to retain the loop, I would reconfigure the antenna as a delta loop, apex down. You can feed the loop at the apex for horizontal polarization, or part way up the side for vertical polarization (actually it will probably be mixed polarization). Values from $1/6$ or $1/4$ wavelength up the side are often recommended for vertical polarization. I think that L. B. has posted modeled information for these configurations in the recent past and you may wish to review the archives for this information.

I would also put a balun or choke at the feed point to eliminate the possibility of feed point radiation. You can make a "self resonant choke" by simply coiling the feed line at the feed point; see the Handbook for some excellent designs by W7EL. I think they are his designs, they don't give him credit in the 1996 edition. If you want to get fancy, you can make a simple transmission line or current balun by coiling 10 to 12 turns through a ferrite core with permeability of 125 or less. For particularly stubborn cases of feed line radiation you may wish to add additional choke in the shack next to the transmitter.

You also say " =8A it seems this G5RV is tough to beat for an all band wire antenna. Your practical comments welcome."

If you are using the classical G5RV I would suggest replacing the coax with ladder line all the way to a tuner in the shack. A balanced tuner here is best, if you can't do that an ungrounded tuner with a 1:1 balun at it's input (transmitter side) is the next best choice, the last choice is a 4:1 balun at the output (antenna side). If you use the 4:1 balun at the output I suggest you read Jerry Sevick's comments on this configuration in his book published by CQ. I don't have a copy handy, but it's title is something like "Baluns and UnBaluns for the Radio Amateur". He demonstrates that with some consideration for the load being matched, and a hefty balun this configuration can work with acceptable losses. Proper choices of antenna and feed line length can avoid the extremes of matching where the losses are the greatest.

You may wish to replace your large loop with a smaller one, say 40 M to get the bottom up off the ground to reduce ground losses. Feed it with ladder line and use a tuner for multiple band operation. On 80M you can tie the

ends of the feeder together and feed it as a vertical against radials or a counterpoise.

I think that the simplest multiple band antenna consists of paralleled dipoles. An 80 M dipole, paralleled with a 40 M dipole, paralleled with a 20 M dipole, paralleled with a 10 M dipole will provide good coverage of 80, 40, 20, and 10 with relatively low SWR. This works, at least in theory because the dipoles on the bands not in use present a high impedance relative to the low impedance, 70 ohms or so, of the dipole on the band in use. In practice these can be somewhat tricky to tune to minimum SWR due to residual interactions between the dipoles, but tuning is greatly simplified if the ends of the higher frequency dipoles are brought down perpendicular to the dipole for a foot (10M) or 2 ft (40M). This reduces the capacitive coupling between the dipoles. Also tuning should start at the highest frequency and proceed to the lowest. Resist the urge to improve on good enough. 15 M can be operated on the 40 M dipole as a 3/2 dipole with a tuner or by the addition of capacitive loading (a foot figure eight of wire will do) a quarter wavelength (on 15 meters) out from the center(see the handbook). If you do this you may wish to run the 40 M dipole 45 degrees from the axis of the other dipoles. This will align 2 of the main lobes on 15 with the main lobes on the other bands, and will have little effect on the 40 M pattern for antenna heights less than a half wavelength on 40 M (66 feet or so).

This antenna should be fed with a balun or choke at the feed point to prevent feed line radiation. At 50 feet it should have excellent performance and will require less wire than your present loop. You can use the coax feed line as a vertical on 80M by shorting center to the shield together and feeding against a radials or a counterpoise.

I have used this antenna, a classic G5RV, several G5RV variations, including balanced feeders to a tuner, and a center fed Zepp 100 feet long. I think that the parallel dipoles are the easiest to deal with and are, for the most part, equivalent in performance. The G5RV moderate gain at higher frequencies is offset by the fact that it does not occur in the same direction on all bands, and the G5RV ends up having gain in an uninteresting direction on some bands. My current antenna is a 30 M loop fed with ladder line to a tuner. I use this on 160 M, 80 M, and occasionally 40 M as a vertical and on 40 M to 17 M as a loop. On 15 to 10 M I use a 12 M loop fed with ladder line to a tuner.

You will have to make other provisions for optimum performance on the WARC bands, as dipoles on these bands will not have high impedances relative to their adjacent conventional band, but an 80 M dipole cut for the low CW end of the band will be a reasonable load on 30 M as a 3/2 antenna with an SWR of 5:1 or so, which with a tuner will have losses that probably will be no worse than a classic G5RV (one with coax feed) on that band. It is not optimum though and a separate dipole or loop for that band will be better.

The same 80 M dipole cut for the low end of the band will also have similar resonances near the 12 M, 5/2 wavelength and 17 M, 7/2 wavelength, bands and can be operated with similar moderately high SWRs. This is not a good solution for the best signal on these bands, but it is probably no worse than the classic G5RV on these bands.

Multiple band antennas are of necessity a compromise. You trade off performance in terms of radiation efficiency, antenna patterns, and use of entire antenna's length for convenience in terms of no feed line switching or tuning. There is no free lunch and there are no miracle antennas. You can choose where to take your losses though if you know a little about the antennas. At least then you know where your limitations are and what you can do to improve them if you want to.

Good luck and keep us posted on your antenna experiments. - Duffey KK6MC

James R. Duffey
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From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: Jack Bryant <Jack.Bryant@math.tamu.edu>
Subject: [6586] Monday fox
Message-ID: <199612171615.KAA16009@fourier.math.tamu.edu>

Fox report for Dec 17z. The signal report is the one I received. Try to figure some pattern there! I started out using the three longwires, each about 100 m long, with remote switching, but some (intentional) QRM and I changed to the 4 square array. Led me to believe whoever it is is fairly close and more or less NE from me. Actually the random digital stuff caused more problems, plus my Argosy drifts like crazy (PT0 problem). Wanted 40/hour, but ran out of anyone to work.

CA beat the pants off TX, as expected.

72, Jack W5TFB #282 (although they say I was sending 288)

#	time	call	RST	s/p	name	num/pwr
1	0200	N9DD	579	IN	TOM	32
2	0201	N6MM	569	CA	HARVEY	318
3	0202	N2VPK	579	NY	MARK	314
4	0203	VE3JC	579	ON	JOHN	744
5	0204	WA8CDV	599	NJ	MIKE	5W
6	0206	WA9PWP	479	WI	PAUL	127
7	0207	AB5OU	449	NM	TIM	73
8	0208	WA1UPB	599	NC	JOHN	5W
9	0211	N1QQV	559	CT	KEN	400
10	0213	NR3Z	559	PA	MARTY	813
11	0218	W6ZH	569	CA	PETE	257
12	0219	W9JIF	559	IL	CARL	5W
13	0220	K5ON	569	NM	GARY	770
14	0221	NN9K	579	IL	PETER	5
15	0222	W6SU	559	CA	JOHN	48
16	0223	AA0XI	559	CO	MARS?	153
17	0225	KB9IUA	579	IL	KEVIN	384
18	0226	VE7SL	579	BC	STEVE	769
19	0226	W1EAT	539	VT	TIM	5W
20	0227	W9DZ	579	IN	ALLEN	112
21	0229	KC40	599	KY	ROY	322
22	0231	K5PSH	599	TX	JERRY	5W
23	0234	N2YRJ	579	NY	BOB	128
24	0236	N8VAR	559	OH	RON	263
25	0237	KA3WMJ	559	PA	KEN	355
26	0238	K2VNM	559	NY	BOB	735
27	0240	W7GH	449	AZ	CHUCK	5W
28	0241	W7JDZ	339	ID	MAC	3W
29	0242	KE4YH	559	FL	STEW	590
30	0244	W4MO	559	KY	STEW	5W
31	0246	AB4RR	459	TN	STEVE	4W
32	0247	W5XE	579	TX	RAL	256
33	0248	K6JI	559	CA	DENNIE	303
34	0249	K1MG	559	CA	MIKE	614
35	0251	W1HUE	559	ID	LARRY	228
35	0253	AC8W	569	MI	STAN	5W
36	0254	N7GS	559	MT	MAL	815
37	0255	K06KA	569	CA	ROB	176
38	0255	K5UP	559	OK	GLEN	21
39	0257	W0CH	559	MO	DAVE	618
40	0257	K7UY	599	NV	RON	17
41	0258	W7JDZ	599	ID	MAC	3W
42	0300	AB7ST	589	UT	BOB	129
43	0302	W6BAB	559	CA	HARVEY	5W
44	0303	KK7BD	559	AZ	DAN	5W

45	0304	W8DN	559	OH	MIKE	575
46	0305	NI0A	579	MN	JOHN	689
47	0307	KI0G	559	CO	BOB	239
48	0308	KB0VCC	559	CA	DALE	91
49	0309	KD6ZMJ	559	CA	JACK	674
50	0311	AB5UA	559	OK	CLIF	478
51	0312	N6XU	559	CA	STAN	66
52	0313	NQ7K	559	AZ	MIKE	47
53	0313	NQ7X	559	AZ	FLOYD	343
54	0314	KK5RO	559	OK	VERNON	325
55	0315	K2VCO	559	CA	VIC	725
56	0316	K7CT	569	AZ	ROGER	62
57	0317	KD0SU	539	CO	RICK	539
59	0318	N6WG	339	CA	BOB	26
60	0320	KK4KF	559	FL	BILL	755
61	0321	W7LYO	459	OR	DON	5W
62	0322	KI6SN	559	CA	RICH	55
63	0324	AE4IC	559	NC	BOB	54
64	0325	N6KR	449	CA	WAYNE	5W
65	0327	KI7MN	559	AZ	BOB	5W
66	0328	W6EMT	559	WA	ROY	369
67	0329	AC5II	549	OK	DON	264
68	0330	W5SST	349	TX	FRANK	5W
69	0332	K0EVZ	589	MN	DOC	861
70	0335	N1UMA	349	ME	GORD	1W
71	0338	AA1MY	449	CT	SEAB	574
72	0340	W7GVN	579	AZ	ROD	849
73	0343	KC7NEV	229	AZ	JOE	191
74	0347	W0SS	559	IA	DAVE	5W
75	0353	KF8EE	599	OH	TED	302
76	0055	AD4Y0	559	AL	DANNY	711
77	0357	N4SO	559	AL	KEN	5W

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
 From: "duane" <duane@flinet.com>
 Subject: [6567] NB7W John Koenig
 Message-ID: <199612170620.BAA27327@shell.flinet.com>

Does anyone know NB7W John Koenig email address. I need to ask him if I may refer to his article in QRPP about building VFO's, I would like to hit the high points in his design of VFOs in my Radio Design Lessons (home brewing) going on at my web address. John did a very Good Job explaining the hows and whys to making stable VFOs in Volume IV Number 2 June1996 of the QRPP journal.

Duane AB4BE
<http://www.flinet.com/~duane>
duane@flinet.com
ab4be@amsat.org

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: "Jess Gypin" <JessNOTFI@msn.com>
Subject: [6570] New Email address again, TE NE KE pictures.
Message-ID: <UPMAIL04.199612171122270245@msn.com>

Hi all,

Well it turns out that after I thought that I had checked everything that I thought I needed to that the Microsoft Exchange Mailer stinks. And there are a couple of other things a things that I did not like about MSN, so, I am switching ISP's again and have another new Email address

JessQRP@concentric.net

We will see how this one does.....

All of the folks that wanted pictures of the TE NE KE and have not yet gotten them or Microsoft Mail screwed them up, let me know and I will forward more copies of the pictures to you. I will be using the mailer in Netscape so there should not be anymore problems!

Jess NOTFI

JessQRP@concentric.net <-----NEW EMAIL ADDRESS FOR PICTURES!

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: jbartac@max.state.ia.us (jbartac)
Subject: [6593] New Sommer Vertical Antennas
Message-ID: <32B6F1FE.7CFF@max.state.ia.us>

I have run across some unique vertical antennas at the Sommer Antennas web site:

[Http://www.sommerantennas.com/](http://www.sommerantennas.com/)

Sommer Antennas of Geneva, FL are manufactured and marketed by W4/DJ2UT.

Look in the catalog at their web site, and select either the T-25 25 ft/7.5 m vertical radiator or the T-50 50 ft/15 m vertical radiator which is located near the bottom of the catalog page. (You also may be interested in looking at their 2 discone antennas near the bottom of the page, but those are not the subject of this posting.)

The Sommer vertical antenna has been briefly advertised in QST, but the pictorial views and working principles contained in the web page make it easier to comprehend. It's hard to describe in mere words, but briefly the vertical appears to be an aluminum tube with a "gamma" feed wire running the length of it. There are several short aluminum tubing radials at the bottom and the coax feedline attaches to a balun which is inserted between 'radial' ground and the vertical tube. An additional balun is placed between the vertical 'gamma' wire and the 'radial' ground which connects to an ordinary dummy load via a second coax feeder.

The 25 foot tall antenna covers all the HF bands and Sommer claims very low losses on the upper bands ("radiation efficiency of 85 to 98% at 7 MHz and above") and declares what sound to me like reasonable loss figures on the low bands. The 50 foot vertical covers the same bands but Sommer claims better efficiency on 160 and 80 than with the smaller vertical (seems logical).

Take a look at the site yourself and see what you think. Does anyone on the list have one of these in operation already? Let us know how you like it; how it performs, etc.

I'd dearly love to have one of these, but I know the XYL will not currently allow it. Also know ye that I am in no way associated with Sommer antennas nor get any remuneration nor special favor even if I do happen to say something nice about them.

72,

Jerry L. Bartachek K00CA <><
Washington, IA

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: Cecil A Moore <Cecil_A_Moore@ccm.ch.intel.com>
Subject: [6590] Non-resonant dipoles with ladder line

This posting apparently didn't get through yesterday because of a full mailbox at qrp-l. Hope it's not a duplication.

The response to my posting about throwing away the antenna tuner was overwhelming. Let me state a few principles involved:

When we write an antenna impedance like $90 + j450$, we mean 90 ohms of resistance and 450 ohms of inductive reactance. How much inductance is 450 ohms? That depends on the frequency. On 7.040 MHz, 450 ohms

of inductive reactance is 10.2 microhenries. If you want to use coax on this antenna, you don't want that 50:1 SWR caused primarily by the inductive reactance so you can install 450 ohms of capacitive reactance in series at the feedpoint to neutralize the inductive reactance and drop the SWR to less than 2:1. The value of the capacitor for 7.040 MHz would be 50.2 pf. Thus we have located the antenna tuner function at the antenna.

It is inconvenient to tune a multi-band antenna at the feedpoint. So let's feed this antenna with low-loss 450 ohm window line and just tolerate a 10:1 SWR on a portion of the line. We can simply locate two 100 pf capacitors (each $X_c=225$ ohms), in series, 1/2 wavelength from the antenna or at one wavelength (or any multiple of a half-wavelength).

0.74 WL further along the line is a point where the impedance equals $50+j1260$. If we neutralize that series inductive reactance with series caps, the result is a perfect 50 ohms. Further along the line we can use one parallel inductance or one parallel cap to achieve that perfect 50 ohms. A Parallel Cap (PC) seems the most efficient point.

It is tremendously easier to match the feedline impedance when one has an idea of the magnitude of the impedance. EZNEC can give a ballpark figure, close enough that adjustments can be made to bring it to perfection. An inexpensive current pick-up loop will indicate where the current maximums are on the parallel feedline. Just past the current maximum toward the transmitter is the PC-rr point where PC-50 indicates the point where locating a Parallel Capacitor will result in a purely resistive 50 ohms impedance. PC-200 would match a 4:1 balun perfectly.

This stuff is not rocket science and can be learned easily and quickly. If one wants a quick and dirty fix, use an antenna tuner and a balun. If one wants perfection, invest a couple of hours in learning how to measure the antenna/feedline impedance with a very inexpensive pick-up loop and a voltmeter.

For the current loop to work on the low bands, one needs to put about 100 watts down the feedline, at least temporarily, to overcome the diode drop in the pickup loop. This approach will not work on coax. If one has access to a sensitive RF millivoltmeter, these measurements can be made at qrp levels.

73, Cecil, W6RCA, 00TC

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996

From: Mike Robinson <miker@cc.com>
Subject: [6585] Northern Colorado Hamfest
Message-ID: <9612171600.AA20990@voder.nsc.com>

ObQRP:

***** Winter Superfest IV *****

Who: The Northern Colorado Amateur Radio Club announces
Winter Superfest IV!

When: Saturday, January 11, 1997
9:00 AM - 3:00 PM (set up at 6:00 AM Saturday, or Friday
Evening) Admission: \$3.00

Where: Larimer County Fairgrounds,
Railroad Ave, in Loveland, Colorado

What: - commercial exhibitors
- VE exams : by registration
- Prizes and prizes!

Tables: \$8.00 includes admission and prize ticket
Reserve your table by sending check to:
Jeanene Gage, N0YHY, 303-351-7327
1533 1/2 9th st.
Greeley, CO 80631-3113

Info: 970-352-5304 General Info and answering machine.

***** THIS IS THE BIG ONE!!! *****

Why: This has become the premier hamfest in northern Colorado.
Last January we had over 160 tables serving more than 1200 customers.
CQC will be there and a lot of hams that support the qrp-l.

=====
7.3 de Michael N7MR miker@cc.com michael@frii.com
http://www.frii.com/~michael
QRP-L #126 Norcal #857 CQC #180
=====

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996

From: JFelts4572@aol.com
Subject: [6611] OHR-400 Kit Reviews
Message-ID: <961217180757_1221468123@emout10.mail.aol.com>

I just ordered my Christmas present today, a OHR-400. Does anyone know of any kit reviews on it? If so what mags? Thanks.

Jerry - NR5A - Box Elder, SD

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: mvjfm@mvubr.mv.lucent.com (James M Fitton +1 508 960 2577)
Subject: [6583] Olde Tyme Radio - 160m
Message-ID: <199612171543.KAA03098@alig1.firewall.lucent.com>

Finished an SWL-160 meter transceiver kit, and antenna tuner.

I am having an absolute ball on 160m !!! Worked PA, MI, NC, NY (from NH) last night.

The band apparently is usable only in the evening, in wintertime.

Many are amazed at the HB, 2 Watt station on 160m. There seems to be very little QRP activity here.

The Rx is very sensitive and stable, and the Tx is capable of a clean 2.25 Watt signal.

The rig required some experimenting to get the tuning range just right, and it took a few days of experimenting to perfect a junkbox tuner, but the results are remarkable.

There seems to be a lot of older callsigns (W1, W2, W3 etc) and operators who are very polite and patient on the band.

I heard stations from Sweden on, but dont think I have a prayer to work them.

This weekend I will try to lay a few 135 feet wire counterpoise wires around the backyard to see what happens.

e-mail me for a 160m sked.....

72/73 Jim Fitton, W1FMR <>< NH jfitton@lucent.mv.com

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: Cecil A Moore <Cecil_A_Moore@ccm.ch.intel.com>
Subject: [6546] Perfect Antenna Matches

The response to my posting about throwing away the antenna tuner was overwhelming. Let me state a few principles involved:

When we write an antenna impedance like $90+j450$, we mean 90 ohms of resistance and 450 ohms of inductive reactance. How much inductance is 450 ohms? That depends on the frequency. On 7.040 MHz, 450 ohms of inductive reactance is 10.2 microhenries. If you want to use coax on this antenna, you don't want that 50:1 SWR caused primarily by the inductive reactance so you can install 450 ohms of capacitive reactance in series at the feedpoint to neutralize the inductive reactance and drop the SWR to less than 2:1. The value of the capacitor for 7.040 MHz would be 50.2 pf. Thus we have located the antenna tuner function at the antenna.

It is inconvenient to tune a multi-band antenna at the feedpoint. So let's feed this antenna with low-loss 450 ohm window line and just tolerate a 10:1 SWR on a portion of the line. We can simply locate the 50.2 pf capacitor, in series, 1/2 wavelength from the antenna or at one wavelength (or any multiple of a half-wavelength).

0.74 WL further along the line is a point where the impedance equals $50+j1260$. If we neutralize that series inductive reactance with a series cap, the result is a perfect 50 ohms. Further along the line we can use a parallel inductance or a parallel cap to achieve that perfect 50 ohms.

It is tremendously easier to match the feedline impedance when one has an idea of the magnitude of the impedance. EZNEC can give a ballpark figure, close enough that adjustments can be made to bring it to perfection. An inexpensive current pick-up loop will indicate where the current maxima are on the parallel feedline. Just past the current maximum toward the transmitter is the PC-rr point where PC-50 indicates the point where locating a Parallel Capacitor will result in a purely resistive 50 ohms impedance.

This stuff is not rocket science and can be learned easily and quickly. If one wants a quick and dirty fix, use an antenna tuner and a balun. If one wants perfection, invest a couple of hours in learning how to measure the balanced antenna/feedline impedance and SWR with a very

inexpensive pick-up loop and a voltmeter. QRP folk need efficient antenna systems. I suspect most non-resonant antenna systems could pick up an 'S' unit or two using high efficiency matching techniques.

73, Cecil, W6RCA, 00TC

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: tart1@juno.com (Nathan C Tart)
Subject: [6605] Portable Radios for QRP
Message-ID: <19961217.152245.4751.16.tart1@juno.com>

In response the question about the various rcvrs

I use the Radio Shack DX440 with some success
it has a bfo and will work ok but mostly for fixed frequency use.... not
much for cw/ssb band scanning and operating around... it will work ok
though..

So much for the DX440... have not used the
other ones

Nathan Tart
AC4GT

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: ldg@radix.net (LDG Electronics)
Subject: [6561] QRP Digital Wattmeter
Message-ID: <v01540b01aedbce8d4ee8@[206.62.179.66]>

Hello to everyone again,

Last week I asked for inputs on a new digital qrp wattmeter I am currently
designing. I was looking for features that qrp users would want to see in
such a device. The results were really informative. Nearly 20 people
responded and came up with ideas I would had never dreamed of adding, but
made a lot of sense after hearing about it. Here are the results.

Nearly everyone agreed that the unit should measure peak AND average power.

Only a couple people though the RS-232 interface would be neat, but they
couldn't think of a good use for it.

Several suggested having a remote sensor and possibly multiple remote sensors.

Many (over 30%) thought that since the unit was going to be digital, that a frequency counter should also be included.

Other items mentioned were an automatic dummy load, a balun, a built in keyer and a field strength meter.

The two items that really peaked my interest were the frequency counter and automatic dummy load. Since this is going to be an all digital unit, the frequency counter sounds like a logical first item to add. There may be a resolution problem with reading the actual frequency (it may only go down to 1 kHz), but it seems like it can be done.

The automatic dummy load also sounded interesting. The unit could have a programmable swr limit that when reached would switch the output to a dummy load. This would be a great feature for rigs that did not have a swr protection circuit built in.

It will take months to get all this designed and tested, so I'll give more updates when it gets closer a working unit. Thanks again to all who responded.

Dwayne Kincaid
WD8OYG

LDG Electronics

Phone: 410-586-2177 Tech Support 5-9 pm EST
Fax: 410-586-8475 <new number> 24 hour
<new e-mail and home page>
e-mail: ldg@radix.net
<http://www.radix.net/~ldg>

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: Peter_Simpson@3mail.3Com.COM
Subject: [6574] QRPTTF: New Hampshire?
Message-ID: <85256403.0043B34C.00@hqoutbound.ops.3com.com>

I'm looking for others who may be interested in a Spring QRPTTF expedition to mid-New Hampshire. Details on exactly why will be provided to those who respond. I am not a rabid contesteer, the idea will be to get outside, have fun and work some QRP.

Any takers?
Peter, KA1AXY

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: Steve Galchutt <S&P@webaccess.net>
Subject: [6598] Query: Solar Panel Resources?? Types??
Message-ID: <32B6DC67.61A8@webaccess.net>

Can anyone suggest resources for solar panels. (Preferable lightweight designs) And it's been sometime (ten years) since I've been looking into this market has there been any breakthroughs in the solar technology I.E. higher current for size/weight of cell??

Regards Steve N0TU

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: Bill Todd <bill@techline.com>
Subject: [6568] Radio Tubes for Sale
Message-ID: <1.5.4.32.19961217192819.0067390c@mail.techline.com>

Hello Group -

Have you ever gone through all those musty old cardboard boxes where you have stored those radio tubes ("valves" for you in old England..hi)? Well I just did it, and now I have a nifty computer print out of all the various tubes in my collection.

I think that some of these are valuable (mainly the transmitting final tubes), but I am not sure what the going rate is for your standard receiver tube (i.e., 12AX7's, 6AU6's, 6BE6's, etc).

Rather than take up the space here to list all of them...if any of you need a particular tube, please send me an E-Mail at:

n7mfb@juno.com

and I will see if I have what you are looking for. We can negotiate a fair

price for any tubes you need.

CUL, Bill-N7MFB
Bay Center, WA
CUL - Bill-N7MFB
["QRP Forever"]
NW QRP #1 AK-QRP #4, CO-QRP #41, NE-QRP #63,
NorCal #214, QRP-L #715, MI-QRP-#1109, ARCI #6802
(co-owner of Yorkshire Terrier named "Bart")

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: jerryh@webzone.net (Jerry Henshaw)
Subject: [6584] Rainbow Tuner
Message-ID: <01BBEBFF.466C2160@pm1.ppp3.webzone.net>

Hi Gang,

I have read several references to the Rainbow Tuner and I can't seem to =
find any details on price, availability, and ordering information, etc. =
Can someone enlighten me???

Thanks in advance.

72's

Jerry Henshaw
KR5L / QRP
jerryh@webzone.net

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: Influential Technologies <influtec@execpc.com>
Subject: [6543] Rick Campbell Info
Message-ID: <Pine.SOL.3.95.961216191746.27478A-100000@earth>

Good Everning Fellow QRP'ers

I am new to this list and I will watch and learn your ways as best I can.
In the mean time I am hoping someone can help me with obtaining some
information. I am searching for info, articles, etc... regarding the
following:
The R1, R2, T2, and Mini R2. I believe these are connected to Rick
Campbell.

Any help you can share will be most appreciated.

Thanks and Happy Holidays to you ALL.

Chris Pasbrig
North Prairie, WI 53153

KB9LBN
influtec@execpc.com

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: Jim Hydzik <congress@magpage.com>
Subject: [6576] Sign-up Log FSFD as of 12/17
Message-ID: <199612171427.JAA16362@alaska.magpage.com>

Hello Gang,
Several of you have asked to see a list of State Volunteers for FSFD. This is it as of 12/17/96:

AL=KS4L, AK=AL7FS, AZ=KC7NEV/W7KXB/KK7BD, AR=W0LK, CA=W6JHB/N6WG/AC6KW/K6LS, CO=AL7GQ/AA0XI/KB0VCC, CT=-----, DE=K3AS/KA3LLL/K3QIO, FL=KK4KF/W2GUM/N4BP

GA=W4ED/N4XY/KI4JA, HI=AL7FS/KH6, ID=WB5QMP, IL=N9HH, IN=N9DD, IA=-----, KS=-----, KY=KC40, LA=-----, ME=WA5CVM, MD=N3REY/NF3I, MA=WA1QVM, MI=W8KC/WA8LCZ/WA8CDU/W8RU

MN=K0EVZ/N0UR, MS=K5XU, MO=N0IT, MT=KJ7UN, NE=-----, NV=KU7Y, NH=AA1MI/AA1IK, NJ=N2CQ/N2TNN, NM=-----, NY=WZ2T/KV2X/N2TO, NC=AE4IC, ND=-----, OH=K8IDN

OK=KR5L, OR=N7CQR, PA=NR3Z, RI=-----, SC=K4NK/WJ4P/W2UX, SD=-----, TN=-----, TX=NR3E/K5W0/W5TFB/Jack Bryant-282, UT=AB7ST, VT=W1EAT, VA=N7RI, WA=N7MFB, WV=xxxx, WI=WA9PWP, WY=-----, WASH-DC=N3FRT

The ---- calls need to be filled. If you can help for one day between Jan 1 and Feb 19 with any of those states, please email me. The more ops. we have in each state the more bands and times can be activated for everyone to pick 'em off. Please jump in the action.....email to: congress@magpage.com

Thanks, CU in '97, Jim K3QIO Delaware

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: d.nordquest@juno.com

Subject: [6544] Switching Mixers
Message-ID: <19961216.214119.4455.8.d.nordquest@juno.com>

Related to Laura's excellent post on logic chips as mixers was one by Ha-Jo Brandt in SPRAT. I don't have the cite, unfortunately. However, I think Ha-Jo reported an outstanding third-order intercept. Anyone know when Ha-Jo's article appeared?

Dave KE9ED

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: lhalliday@creo.bc.ca (laura halliday)
Subject: [6542] Switching mixers (74HC4066 et al)
Message-ID: <199612170104.RAA02288@BC.net>

Many have asked for details of this, so here goes...

My original reference for this was Technical Topics in Radio Communication for January 1996. This was based on earlier stuff in RF Design.

Essentially, you are creating 0/180 degree RF signals, and then switching rapidly between them.

The circuit uses a trifilar input transformer - I guesstimated 10 turns on an FT37-61. One winding is the antenna input. The other two are connected with one start and one end connected together, and the other two ends feeding push-pull into the mixer. The connected point is where you apply $V_{cc}/2$ bias via a voltage divider (two 10k resistors with serious RF bypassing). The push-pull outputs feed into the chip, with the four analogue switches wired as two parallel pairs (their ON resistance is quite finite). All the outputs are tied together to a coupling capacitor and stuff to whatever stage comes next.

The original article used a 74HC04 hex inverter to square and buffer the LO, taking the 0/180 degree LO outputs from the input and output of an inverter. While this works, it has an inherent phase error (the propagation delay of the inverter), so I tried using a 74HC86 quad XOR gate, with two gates connected to square and buffer the input, and then two more gates to do the phase splitting. Connect one input from each to the buffered LO signal. Tie one other input to ground, the other to Vcc. One inverts, the other doesn't. Done.

Subjectively, the 74HC86 version works better. It doesn't hum, while the 74HC04 version hums a bit. Of course, this could also be cruddy construction, mismatched toroid windings, rats nest power connections, or a host of other things.

Gotcha Dept: the CD4066 diagram in the ARRL Component Data book is wrong. The legends on the pinouts are right. The diagram inside the chip is wrong (and doesn't match the legend).

Laura Halliday VE7LDH	"C'est une femme mutine, assez
lhalliday@creo.com	elegante, grave et legere, ayant le
ve7ldh@amsat.org	sens du confort et du plaisir
Locator: CN89mg	en tout." - C. Deneuve

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: "Steve Hurst" <shurst@magiclink.com>
Subject: [6564] Test don't read
Message-ID: <199612170506.AAA215700@nss2.CC.Lehigh.EDU>

test only

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: k7yha@juno.com (Richard H. Arland)
Subject: [6580] Tonites Fox (12-17)
Message-ID: <19961217.152207.4415.4.k7yha@juno.com>

gang:

Who and where for tonites fox?

73 rich K7SZ

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: Cecil A Moore <Cecil_A_Moore@ccm.ch.intel.com>
Subject: [6604] Triangular Loop vs Dipole

W4RNL pointed out some shortcomings in my EZNEC models comparing these two antennas. I've made the improvements to the model and the results changed somewhat. The top of both antennas is at

37ft. The dipole is 1/2 WL. The loop is a full WL.

Below a TOA (take-off-angle) of 18deg, the loop has up to 3dB gain over the dipole. At 18deg, the gains are equal at 1.2dB but the loop has a horizontal beamwidth of 2x103deg compared to the dipole's 2x84deg. Above a TOA of 18deg the dipole has gain over the loop, 3dB at 34deg. IMO, most everything above a TOA of 45deg on 40m is wasted, especially at night. Above 45deg, the dipole radiates 6dB more RF than the loop which, IMO, is mostly wasted.

One of the advantages of the triangular loop is the lower corner feedpoint, 17ft from the ground in my case. The shorter run of coax with the loop compared to the dipole is less lossy and a cost advantage for the loop.

Thanks LB, for the lesson in more accurate modeling.

73, Cecil, W6RCA, 00TC

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: "Wilford D. Lindsey" <70511.3041@CompuServe.COM>
Subject: [6560] W5TFB fox tonight
Message-ID: <961217040302_70511.3041_IHD97-1@CompuServe.COM>

Jack:

Great to work you tonight at 0330UTC, 12/17/96. You were doing a really great job in what sounded like very heavy QRN and tremendous heterodynes at my QTH. Thanks for coming back, and for the repeat. Wanted to be sure. Hope it did not create a problem for you.

Equipment here = Sierra on 7038.2 running 3 watts into a HB inverted vee at 28' in the center. Also using an MFJ Optimizer CW filter and headphones to sort everything out. When I actually QSOed with you, you were suddenly 589 for a short period. Later I heard you at 589 again, then QSB into the QRN/heterodynes once again.

Have been recovering very slowly from surgery, so working the FOX gave me a real boost tonight. Thanks again, and Happy Holidays!

72/73,
--Doc/K0EVZ QRP-L #861
519 16th St SE
Rochester, MN 55904

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: Joe Gervais <vole@primenet.com>
Subject: [6612] [FOX] Re: Fox for Dinner
Message-ID: <199612172346.QAA21166@primenet.com>

> Almost missed this one! Had to go to xyl's Brit Club xmas dinner party
> at 0030Z and was sure I wouldn't get away before the Fox did. Soooo, I set
> up the Scout in the car on 7038 with the Hustler ant and hoped I could slip
> away for a few minutes and nab him.

Now *that's* what I call a dedicated hunter. :-) Wish I'd
thought of it!

My eldest son's Christmas pageant was set to start the same
time the TX Fox did. The pageant went as expected - any time
you have an auditorium full of 3-5 year olds, there's bound
to be excitement. It was like watching someone trying to herd
100 cats. :-) Did the post-show ice cream as promised. Did
the post-show "drive around and see the Christmas lights" as
promised. Finally got home! 15 minutes left. Ack!

Fired up the rig and immediately heard Jack calling CQ. Wahoo!
Nice sig! Sent my call... and he disappeared. Nowhere. Gone.
sigh Knew it was too good to be true. Hey wait, "...7NEV..."
he's still there! Sort of. Asked for a repeat. Got it all!
Nearly missed his request for my name again. Sent it. Poor
Jack - my hands were still cold and my fist was worse than
usual. Local plague of QRN was beating his sig into the ground,
so was only able to give a 229. Don't take it personally. :-)

Barely got Cam, the CA Fox, last week too. Down to the wire.
Man, this stuff is making me a nervous wreck. Time to go find
some brandy-laden eggnog and unwind....

Great job, Elusive Furry Ones! Thanks!

Ho Ho Ho de KC7NEV,

-Joe, vole@primenet.com, AZ ScQRPions (Phoenix)

10+1 Skins on the wall - met my goal for the season! Yeeeeehaw!!!

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: ori@juno.com (Ori K Mizrahi-Shalom)
Subject: [6566] Re: "38 Special" - Enhanced IF Filter
Message-ID: <19961216.215602.4375.2.ori@juno.com>

Hi Bill

The enhanced IF filter is very simple BUT do not attempt to do it unless you have some test equipment. It is a half lattice with 2 crystals in the filter and you still need a third matched crystal for the BFO. Using different crystal than the kit changes the alignment and frequency "pull" of each circuit. You will have to repeat the job per you particular crystals. Not doing it right will degrade performance! I suggest you listen to the radio before doing that mod. It's not bad at all in the stock form!

CUL

ORI AC6AN

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: rright@primenet.com (Roger Hightower)
Subject: [6555] Re: "TRANSMISSION LINE TRANSFORMERS"
Message-ID: <199612170354.UAA14872@primenet.com>

At 10:07 PM 12/16/96 EST, n4so@juno.com wrote:

>sevick.txt
>From: "Tardette, Lisa" <ltardette@arrl.org>
>Subject: RE: TRANSMISSION LINE TRANSFORMERS
>REF: Jerry Sevick's book "Transmission Line Transformers" no longer published or sold by ARRL.
>Here is the answer from pubsales@arrl.org
>
>Dear Mr. Brown,
>We do not publish the "Transmission Line Transformers". Please contact
>Noble
>Publishing at phone 770-908-2320 or fax 770-939-0157. They now publish
>this
>title.

>Sincerely,
>Lisa Tardette
>Pub. Sales ARRL
> -----

You can also get it direct from Amidon. P.O. Box 956, Torrance, CA 90508

72/73 de Roger N7KT Mesa, AZ Grid DM43cj

NorCal 1099 CoQRP 176 QRP-L 62 G-QRP 9081 ARCI 8946 NE-QRP 383

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: "James C. Owen, III" <owen@apollo.eeel.nist.gov>
Subject: [6577] RE: 10 meter 'test'
Message-ID: <40000.owen@apollo.eeel.nist.gov>

In message Sat, 14 Dec 1996 14:54:04 -0600,
jdenison@aisp.net (JOEL DENISON) writes:

> Ten is quiet here in Maine. No one heard no one worked.

>

>From K4CGY in Maryland.

Joel and MANY others write about 10 being very quiet during the contest. Did you all have the antenna's connected? I thought that 10 was good-not great--but good. It was quite a bit better than last year but did have some quiet times. First three hours Friday night were the best I've seen on a 10m contest, worked 89 Q's. Band opened about 1300Z Saturday at a low rate and Saturday was somewhat quiet during the day, worked another 88 Q's until band closed about 2000Z. Sunday was great! Started about 1300Z at a slow pace then went up to a rate of 64 an hour at about 1900Z and then dropped off until the end. Total was 432 Q's & 58 multipliers in about 20 hours operating. The 64 an hour rate was mostly CA with a few others. Lots of LU's and FL. Sunday was by far the best day and I worked several signing /QRP and they had good strong signals. This was all on SSB. Now I must admit that I ran QRO (forgive me) and I may have a better antenna than some (4 ele FINCO monoband yagi at 47 feet) but my point is that I HEARD a LOT of stations. I don't understand why a lot of you didn't. I also listened and WORKED the very weak stations--Hope I worked some of you. 73/72 Jim K4CGY qrp-l #72

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: Bill Meahan <www@wa8tztg.mi.org>
Subject: [6553] Re: 38 Special 5 Watt Amp

Message-ID: <32b61087.wa8tzg@wa8tzg.mi.org>

> Again, the 5 Watt Power Amp mod includes an IRF510, plus
> 4 resistors and 3 caps all available at Radio Shack, a ferrite bead,
> and a T37-2 toroid, (included in the kit).

Any chance the ferrite bead could be included along with the extra
toroid core? Or are thease available at Rat Shack too?

Bill Meahan WA8TZG wmeahan@wa8tzg.mi.org
ARRL, IMRA, QRP-L(#117), NorCal QRP (#407), G-QRP (#8468), MI-QRP (#M1458)
All statements herein are worth exactly what you paid for them
cat: a purr bearing mammal

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: Kevin Muenzler <muenzlerk@uthscsa.edu>
Subject: [6601] RE: CA beats TX
Message-ID: <01BBEC15.BD8FB200@muenzlerk.uthscsa.edu>

On Tuesday, December 17, 1996 11:37 AM, chuck
adams[SMTP:adams@chuck.dallas.sgi.com] wrote:
>
>It may be that TX got beat by the CA gang,
>but Jack my have set a record for a one night
>string of contacts. Or did Smitty do 80?
>
>dit dit
>SIG
>Chuck Adams (K5FO CP-60) WAS 40m/30m/20m=49/49/50
>EMPS QS0s=109 STATES(w/c)=34/2 DX=0
>
>

We have to let them win every once in a great while so they
don't get too discouraged. :)

Kevin, WB5RUE

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: "Arjen Raateland, SYKE/YV, puh. 09 4030 0457" <Arjen.Raateland@vyh.fi>
Subject: [6572] Re: Colorburst Freq. TVI
Message-ID: <01ID49YHD0BM8X08NF@vyh21.vyh.fi>

>or radiation from the set itself. On a "parts gathering" expedition
>at Gateway Electronics, I found a bin full of "snap-on" split toroid
>ferrite filters (about 1.25" long, and .375" diameter) for \$1.85 each.
>The hole through the core was just large enough to allow the power cord
>to pass through twice (a 1-turn coil). Went back to the rig, and the
>Bill Launer
>wb0cld@wb0cld.ampr.org [44.46.66.25]

>to pass through twice (a *TWO* turn coil). Went back to the rig, and the

;-)

73, Arjen, OH2ZAZ

Arjen Raateland

Suomen Ymp ristö keskus / YV

Finnish Environment Institute, Helsinki, Finland

SAS Support

EMAIL: Arjen.Raateland@vyh.fi

tel. +358 9 4030 0457

fax +358 9 4030 0490

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996

From: Ed Tanton <n4xy@avana.net>

Subject: [6551] Re: Dummy Loads

Message-ID: <3.0.32.19961216223336.009417f0@tiger.avana.net>

Hi Tim (et al)... you can get a 36" long Type C (male) to Type C (male)
using RG214 from Fair Radio for \$9.95 new. Cut in half, apply your favorite
connector to the other end, and voila! Actual Type C adapters are pretty
scarce.

At 08:43 PM 12/16/96 -0500, NZ8J wrote:

>Found a source for a few real nice dummy loads. they were \$20 each,
>Military Surplus new in sealed packages. They are supposedly good from
>hf to over 1 GHZ at 100W. Only one drawback is that they have a "c" type
>connector (looks like a large BNC). I am told that these connectors are
>available. The dummy load is about 3" square, mostly fins. Nomenclature
>is , Dunny Load, Electrical DA-437/GRC-103 (V), made by RCL electronics.
>They were tested by a local ham with access to some good test equipment.
>Jim KB8NN, had a few of these left as of Sat morning. his email
>is:kb8nn@erinet.com
>Good luck, and if anyone has some of these "C" connectors packed away, I
>could use one.
>Thanks

>Tim
>NZ8J
>
>NOT RESPONSIBLE FOR ANY TRANSACTIONS AS A RESULT OF THIS POSTING, JUST
>WANTED TO PASS ON WHAT I THOUGHT WAS A GOOD DEAL.
>
>
>
72/73

Ed Tanton N4XY EMAIL: n4xy@avana.net TEL: (770)579-3933 V/MBX/FAX
189 Pioneer Trail, Marietta, GA 30068-3466

QRP-ARCI#7663 G-QRP#6779 OK-QRP#172 QRP-L#758 AdvRC#140
NORCAL#1779 NCDXF SEDXC

Life Member: ARRL AMSAT IDRA INDEXA QCWA URL: Coming Soon

"Think you can, think you can't: either way you're right!" Henry Ford

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: Bill Myers <bmyers@destin.nfds.net>
Subject: [6559] Re: FOXed
Message-ID: <1.5.4.16.19961216220224.0d17ae9c@destin.nfds.net>

At 07:52 PM 12/16/96 -0800, Monte Stark wrote:

>Well, Jack kinda hid under some noise for a bit, but then
>I heard him again after dinner. Set the filters, got him
>a good q5 and tossed out my call.....bingo....he bit!

I didn't hear him at all until just after 0300Z, then he was 559 or better.

>Good job Jack. (But is it 282 or 288???) :-)

I thought it might have been me, but I was copying 288 every time he sent it. The message from the reflector sitting in front of me said 282. Go figure.

Wasn't sure I was going to be able to get in there with the straight key, the speeds were kinda fast for me. But I only had to throw the call out once.

Thanks for slowing down and getting me Jack, I really appreciate it.

Got my Atomic Keyer kit today and I'll be getting a Super CMOS III for Christmas. Got the TICKs ordered for the 38 Special. I won't have the

straight key for an excuse any more, guess I'll HAVE to get that code speed up!

72/73

--

Bill Myers KK4KF Grid - EM60rk
FISTS#2390 QRP-L#755 ARCI#9282 scQRP#42 CQC#386
Snail Mail P. O. Box 178 Shalimar, FL 32579
e-mail <bmyers@destin.nfds.net>
homepage <http://destin.nfds.net/~bmyers/>
 (Reptiles/Emergency Services/Amateur Radio)
CHECK OUT THE FISTS INTERNATIONAL CW CLUB U. S. HOMEPAGE
<http://n9nvv.qrp.com/~fists> (That's N 9 N V V)

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: kc5moe@juno.com (John E Hutter)
Subject: [6606] Re: HB: Instant Coffee Housing
Message-ID: <19961217.150217.14015.1.KC5MOE@juno.com>

Accidentally found a new one myself a month or so. Celestial Seasonings is including a "collector's tin" in specially marked packages of their herb teas (eight different ones I think). Very well made, very attractive, about half an inch less wide and maybe 1/16th" shallower than the Altoids tin. Plan to collect two sets myself, one to keep, one to build in.

72/73 de KC5MOE -- John

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: lwilken@fairmont.mn.frontiercomm.net
Subject: [6547] Re HW-8 Need Parts
Message-ID: <199612170229.UAA15953@tc.frontiercomm.net>

Thanks to all who responded to my plea for help
in repairing the main tuning capacitor in my HW-8
The plates fell off the rotor shaft and it seems that
most of you recommended epoxy or super glue of
some sort or another. Thanks again, the response
was immediate and overwhelming... I will give it a try
and let you know how it works.

73

Lance - KN0USQ

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: jim seeber <kw3u@warwick.net>
Subject: [6587] Re: HW-8 Need Parts
Message-ID: <32B70ED1.2B7C@warwick.net>

Steve wrote:

>
> lwilken@fairmont.mn.frontiercomm.net wrote:
> >
> > Steve - N0TU
> >
> > Thanks for your reply to my posting.... I'm not sure what shape your HW-8 is
in, but let me know what you want for it and maybe I can
take it off your hands
> >
> > Thanks
> >
> > 73 Lance - KN0USQ
>
> Lance... I spoke to soon after digging out the HW8 I hooked up a random
> wire in the basement and it woke up signals pouring in on 40m so now I
> hooked again....sorry I think I'll chase the spiders and other bugs out
> of case and try and remeber where I left off on the modifications and
> give this little rig some space on the bench next to computer. But
> first things first I must get up an indoor attic antenna. The loop
> articles sounds interesting. RE: your HW8 cap/probs...are the plates
> falling the shaft? or?
>
> ..SteveJust for info on HW-8 parts/repair...I sent a hamfest
hw-8 that was seriously messed up to the advertiser
in back of qst to rebuild and alignment.
The info is RT0 electronics
5585 Hochberger,
eau Claire, MI. 49111.
616-461-3057
I was satisfied with the work preformed, and he did list
parts replaced so maybe he might be a source for HW parts.
Good luck I enjoy mine..73 Jim kw3u

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: rright@primenet.com (Roger Hightower)

Subject: [6556] Re: Island Memory Keyer Kit
Message-ID: <199612170357.UAA15816@primenet.com>

At 07:06 PM 12/16/96 EST, Marshall Emm wrote:

>Re our announcement that Milestone will sell Chuck's Island Keyer kit, there
>is now an IMAGE of the completed board on the web site. It wasn't a real
>good photo to start with, and it was my very first attempt at scanning, but at
>least it will give you the idea [g].

>

>The url is <http://www.mtechnologies.com/mthome> the look for the electronic kits
>link. The image is at the bottom of the keyer page.

>

>73

>Marshall

>AA0XI

>

Hi Marshall. Finally got through to the page, and ordered the "complete"
kit. That means case, connectors, etc. Thought I'd best clarify that since
the order form wasn't set up for that.

Looking forward to getting and building it.

72/73 de Roger N7KT Mesa, AZ Grid DM43cj

NorCal 1099 CoQRP 176 QRP-L 62 G-QRP 9081 ARCI 8946 NE-QRP 383

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: herr@ridgecrest.ca.us (Michael Herr)
Subject: [6565] Re>lightweight batteries for QRPP backpacking
Message-ID: <v01530503aedbd9959ad1@[199.120.150.131]>

>Anyone have suggestions on sources for lightweight batteries for QRPP
>backpacking? (I know lightweight and battery are not in the same
>category)

I use AA cells. I started out using a Radio Shack plastic 8 cell holder,
then added a 9th cell and now using a metal nine cell pack. I choose to use
AA cells cuz everything I take or might take backpacking uses AA cells, ie
the NorCal 40, the 2 meter rig, flashlight, SWL receiver, CD player (not
often) and GPS (someday). I like tha ability to swap batteries as needed and
have done so.

72

Mike WA6ARA

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: JCoote@aol.com
Subject: [6597] Re: lightweight batteries for QRPP backpacking
Message-ID: <961217124546_609700152@emout11.mail.aol.com>

In a message dated 96-12-16 12:22:26 EST, S&P@webaccess.net (Steve N0TU) writes:

>Anyone have suggestions on sources for lightweight batteries for QRPP
>backpacking? (I know lightweight and battery are not in the same
>category)

You might figure out your amp-hour needs (millamp-hours at QRP!) and radio duty cycle and find the smallest alkaline batteries for your application

I've made my own battery packs by soldering nine 1.5 volt batteries in series for 13-14 volts. Use stranded wire and solder carefully. Use alike and all-new batteries. I use good old duct tape to tape the battery pack into a flat configuration and cover the wires and battery ends. These packs are more or less flexible. The packs can be made into any shape you like which is nice for putting in a pack.

72, Jay
W6CJ

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: "Ronald H. Evans" <ronald_evans@pipeline.com>
Subject: [6599] Re: lightweight batteries for QRPP backpacking
Message-ID: <2.2.32.19961217180100.0070d870@pop.pipeline.com>

At 12:45 PM 12/17/96 -0500, you wrote:

>In a message dated 96-12-16 12:22:26 EST, S&P@webaccess.net (Steve N0TU)
>writes:
>
>>Anyone have suggestions on sources for lightweight batteries for QRPP
>>backpacking? (I know lightweight and battery are not in the same
>>category)

My 1993 handbook suggests 7 cell lead-acid batteries in order to keep the end pont voltage up. It also suggests that glider pilots already use 7 cell batteries. Does anyone have any information on them. 73, Ron K4KTB

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: Roger Hightower <rhight@primenet.com>
Subject: [6588] Re: Monday fox
Message-ID: <32B6CA12.3847@primenet.com>

Jack Bryant wrote:

>
> Fox report for Dec 17z. The signal report is the one I received.
> Try to figure some pattern there! I started out using the three
> longwires, each about 100 m long, with remote switching, but some
> (intentional) QRM and I changed to the 4 square array. Led me to
> believe whoever it is is fairly close and more or less NE from me.
> Actually the random digital stuff caused more problems, plus
> my Argosy drifts like crazy (PTO problem). Wanted 40/hour, but
> ran out of anyone to work.

>
> CA beat the pants off TX, as expected.

>
> 72, Jack W5TFB #282 (although they say I was sending 288)

>
>
> # time call RST s/p name num/pwr
>
> 1 0200 N9DD 579 IN TOM 32
> 2 0201 N6MM 569 CA HARVEY 318
> 3 0202 N2VPK 579 NY MARK 314
> 4 0203 VE3JC 579 ON JOHN 744
> 5 0204 WA8CDV 599 NJ MIKE 5W
> 6 0206 WA9PWP 479 WI PAUL 127
> 7 0207 AB5OU 449 NM TIM 73
> 8 0208 WA1UPB 599 NC JOHN 5W
> 9 0211 N1QQV 559 CT KEN 400
> 10 0213 NR3Z 559 PA MARTY 813
> 11 0218 W6ZH 569 CA PETE 257
> 12 0219 W9JIF 559 IL CARL 5W
> 13 0220 K5ON 569 NM GARY 770
> 14 0221 NN9K 579 IL PETER 5
> 15 0222 W6SU 559 CA JOHN 48
> 16 0223 AA0XI 559 CO MARS? 153
> 17 0225 KB9IUA 579 IL KEVIN 384
> 18 0226 VE7SL 579 BC STEVE 769

> 19	0226	W1EAT	539	VT	TIM	5W
> 20	0227	W9DZ	579	IN	ALLEN	112
> 21	0229	KC40	599	KY	ROY	322
> 22	0231	K5PSH	599	TX	JERRY	5W
> 23	0234	N2YRJ	579	NY	BOB	128
> 24	0236	N8VAR	559	OH	RON	263
> 25	0237	KA3WMJ	559	PA	KEN	355
> 26	0238	K2VNM	559	NY	BOB	735
> 27	0240	W7GH	449	AZ	CHUCK	5W
> 28	0241	W7JDZ	339	ID	MAC	3W
> 29	0242	KE4YH	559	FL	STEW	590
> 30	0244	W4MO	559	KY	STEW	5W
> 31	0246	AB4RR	459	TN	STEVE	4W
> 32	0247	W5XE	579	TX	RAL	256
> 33	0248	K6JI	559	CA	DENNIE	303
> 34	0249	K1MG	559	CA	MIKE	614
> 35	0251	W1HUE	559	ID	LARRY	228
> 35	0253	AC8W	569	MI	STAN	5W
> 36	0254	N7GS	559	MT	MAL	815
> 37	0255	K06KA	569	CA	ROB	176
> 38	0255	K5UP	559	OK	GLEN	21
> 39	0257	W0CH	559	MO	DAVE	618
> 40	0257	K7UY	599	NV	RON	17
> 41	0258	W7JDZ	599	ID	MAC	3W
> 42	0300	AB7ST	589	UT	BOB	129
> 43	0302	W6BAB	559	CA	HARVEY	5W
> 44	0303	KK7BD	559	AZ	DAN	5W
> 45	0304	W8DN	559	OH	MIKE	575
> 46	0305	NI0A	579	MN	JOHN	689
> 47	0307	KI0G	559	CO	BOB	239
> 48	0308	KB0VCC	559	CA	DALE	91
> 49	0309	KD6ZMJ	559	CA	JACK	674
> 50	0311	AB5UA	559	OK	CLIF	478
> 51	0312	N6XU	559	CA	STAN	66
> 52	0313	NQ7K	559	AZ	MIKE	47
> 53	0313	NQ7X	559	AZ	FLOYD	343
> 54	0314	KK5RO	559	OK	VERNON	325
> 55	0315	K2VCO	559	CA	VIC	725
> 56	0316	K7CT	569	AZ	ROGER	62
> 57	0317	KD0SU	539	CO	RICK	539
> 59	0318	N6WG	339	CA	BOB	26
> 60	0320	KK4KF	559	FL	BILL	755
> 61	0321	W7LYO	459	OR	DON	5W
> 62	0322	KI6SN	559	CA	RICH	55
> 63	0324	AE4IC	559	NC	BOB	54
> 64	0325	N6KR	449	CA	WAYNE	5W
> 65	0327	KI7MN	559	AZ	BOB	5W
> 66	0328	W6EMT	559	WA	ROY	369

> 67	0329	AC5II	549	OK	DON	264
> 68	0330	W5SST	349	TX	FRANK	5W
> 69	0332	K0EVZ	589	MN	DOC	861
> 70	0335	N1UMA	349	ME	GORD	1W
> 71	0338	AA1MY	449	CT	SEAB	574
> 72	0340	W7GVN	579	AZ	ROD	849
> 73	0343	KC7NEV	229	AZ	JOE	191
> 74	0347	W0SS	559	IA	DAVE	5W
> 75	0353	KF8EE	599	OH	TED	302
> 76	0055	AD4Y0	559	AL	DANNY	711
> 77	0357	N4SO	559	AL	KEN	5W

Hi Jack. Contact Nr. 56 at 0317 should be callsign N7KT. State, Name and NR are OK.

--

72/73 de Roger N7KT Mesa, AZ Grid DM43cj

NorCal 1099 CoQRP 176 QRP-L 62 G-QRP 9081 ARCI 8946 NE-QRP 383

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
 From: "Bob Follett" <bfollett@ditell.com>
 Subject: [6592] RE: New RS Wireless FM Xmitter
 Message-ID: <199612171709.KAA16505@orion.ditell.com>

Gang:

Radio shack put on sale a "CD wireless FM Transmitter", 12-2051A, for around \$29, regularly \$39.

I bought one, and found it has many QRP uses.

It comes with a 1/8" stereo plug for input, and expects to see a line out, or headphone level input. It has a short antenna, and transmits on any of 4 selectable, crystal controlled frequencies into any FM receiver. Range is only about 4-6 feet with the short antenna (it is intended to be used in a car). Runs on two AAA's for 100 hours, fits in your palm, and has a stereo/mono switch on it.

I have it plugged into my Sierra, and can now hear CW through my 150W stereo and Bose speakers -- not bad! I can now hear CW from 150ft away if I 'crank it up' :-))

Can also use it to operate with wireless, FM headset so you can move around the ham shack. With a perimeter loop attached to the antenna, you would receive in your entire house with portable FM receivers.

And, of course, the car is what it was designed for! No more earphones or cords attaching to your cassette player.

There have been other cheap devices like this on the market before, but this one is crystal controlled for stability. No hum, just clean sound as long as you are in the short transmit range (with the stock antenna).

Probably some other uses too. I have only had it one day.

73, Bob

Bob Follett AB7ST, QRP-L # 129, NorCal, ARCI, 10-10, ARS
2861 Estates Dr. VOICE: 801.649.6457
Park City, UT 84060 E-mail: bfollett@ditell.com

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: Patrick Taber <ptaber@logiccraft.com>
Subject: [6600] Re: New Sommer Vertical Antennas
Message-ID: <1.5.4.32.19961217181156.009564c4@freebird>

>Take a look at the site yourself and see what you think. Does anyone on
>the list have one of these in operation already? Let us know how you
>like it; how it performs, etc.

I almost bought one at the New England ARRL Convention last Fall. The maker is pretty persuasive. Since I didn't (I wanted a half wave vertical) I can't say how well they work, but I can say that these things are built like they were made to balance a bulldozer on top of them. I have never seen such rugged construction on ham equipment. His matching transformer looks like it will handle an easy 50 Kilowatts...

He also sells a yagi antenna that uses a box beam for its boom. You could probably hook your safety belt to it and go hand-over-hand out to work on the reflector.

All of which is to say if I was looking for a quarter wave vertical, I'd give this guy first look.

No connection, just impressed with the wares.

>>>==>PStJTT (KC1TD)

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: PaulKB8N@aol.com
Subject: [6549] Re: Perfect Antenna Matches
Message-ID: <961216220602_168719693@emout09.mail.aol.com>

In a message dated 96-12-16 21:28:13 EST, Cecil_A_Moore@ccm.ch.intel.com
(Cecil A Moore) writes:

<< I suspect most non-resonant antenna systems could
pick up an 'S' unit or two using high efficiency matching techniques. >>

Absolutely true. To expand on Cecil's point, many beginners and old-timers alike seem to think that an antenna must be resonant to perform well on a particular band. Not necessarily so, resonance is a relative term. In an absolute sense, antennas are truly resonant in only a very narrow band of frequencies. I routinely add three to four feet to each side of my 40M dipoles and it helps me achieve a better match using the particular length of twinlead I use on that antenna. Similarly, I've cut 80M dipole legs to 60' due to space restrictions and suffered very little degradation in performance. There are certainly "magic" lengths of wire and feedline that can be combined to create a 50 ohm resistive load, as in the G5RV, but you can obtain very effective performance with a wide-ranging, efficient tuner, and a dipole with legs ranging in length from .1 to several wavelengths.

Bottom line, QRO is OK if it refers to your tuner components. 72, Paul, KB8N

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: "L. B. Cebik" <cebik@utkux.utcc.utk.edu>
Subject: [6573] Re: Perfect Antenna Matches (long, erase if not interested)
Message-ID: <Pine.SOL.3.94.961217061647.22465D-100000@utkux4.utcc.utk.edu>

Wonder if we should get organized on this subject. Here is one way to look at antenna matching.

First, unless feedlines are unbalanced and act as part of the antenna, the antenna itself will radiate in just the same way, whatever feed and matching system is in use. Moreover, an antenna (and here we are talking mostly of center-fed horizontal wires) will convert to radiation all the rf electrical energy at its feedpoint after a few cycles (out of the millions per second). Third, resonance in an antenna is simply the condition of having no reactance, either inductive or capacitive, and as Paul notes, is a very narrow frequency phenomenon, but one which occurs repetitively as one scans up the frequency spectrum. Note that resonance does not specify any particular resistive impedance, only zero reactance.

Where can we effect a match to some specified feedline characteristic impedance (which is always considered resistive, but even feedline is not perfect)?

At the antenna terminals: if the resistive part of the antenna's impedance is close to that of our feedline, we can introduce for a given frequency reactances of equal magnitude but opposite type and present the feedline with a resistive impedance. One can also place a network at these terminals, not different in principle from ATU networks, to achieve both a compensation for reactance and a transformation of resistance to the desired level. In fact, with some ingenuity, one might place the final amp of a rig at the terminals, with remote signal and power feed and eliminate any feedline losses altogether.

At the station (transmitter/receiver location): this location is generally chosen for convenience, not for best efficiency. And this is where ATU networks and inductively coupled circuits come into play. They have losses, but when well designed with high-Q components and adjusted for maximum efficiency settings, losses can be quite low--a few percent for most loads presented by incoming feedlines. When ATUs use low Q (lossy) components, are set to inefficient settings (sometimes by poor designs that only permit inefficient settings), use poor physical layouts that create stray inductances and capacitances, etc., losses can be considerable. Between the ATU and the antenna terminals, standard practice is to use feedline with the lowest loss, which usually means 300-450- or 600-ohm parallel feedline. Losses multiply with SWR on the line; hence a low starting figure provides the most efficient power transfer.

Anywhere along the line: For any frequency and antenna feedpoint antenna impedance and feedline characteristic impedance, there will usually be points where one may introduce series or parallel reactances to achieve a resistive impedance of some desired level. This technique is widely useful, but not absolute, since certain lines and antenna impedances will not together reach a resistive value matching a desired line. When the reactance component is a parallel-connected device, it is usually called stub matching, since common practice in pre-WW II days was to use a shorted or open length of feedline as the reactance rather than using a lumped component (capacitor or inductor). HAMCALC has a program for calculating stubs for any feedpoint impedance and proposed feedline. The math of series matching, using feedline lengths as series sections, was worked out by Regier and appears in the IEEE proceeding for 1970 and Electronic Engineering for 1973, as well as QST for July 1978 (and subsequent editions of the Antenna Book). As with stubs, there are antenna impedance-feedline characteristic impedance combinations that do not permit a match, but most cases will work. These techniques are--from the perspective of convenience--best suited to monoband antennas, although one might develop switching or clipping techniques for multiband use of an antenna.

As Walt Maxwell extensively discusses in Reflections (out of print?), each of these techniques in fact resonates an antenna by introducing a reactance which, when transformed up the line to the antenna terminals, presents just the required reactance to compensate for any reactance at the antenna feedpoint. Transformation of the impedance's resistive component to a desired value is done in part by the feedline (since transmission lines are impedance transformers, among other things) and--if the desired value is not obtained this way--by whatever network is employed by devices like ATUs.

In many high power applications, especially where radiated power from the antenna is the user's critical question, efficiency of the matching network may not be considered significant, since lost power (so long as it does not harm the components) can be made up by adding power to the system. For QRPers, there is no such luxury. Hence, it is very useful to learn all we can of ways to improve the efficiency of our matches--wherever along the line we place them. Newcomer books tend to make transmission line and antenna subjects a matter of some rules of thumb to get folks started. Unfortunately, most of us spend too many years thinking that the antenna hand has only a thumb. Every QRPer should dig down into transmission line and antenna theory and practice to learn everything possible about how to radiate tiny power most efficiently. And there is always something new to be learned. I am always amazed that some avid QRPers will modify a kit to get a few tenths of a watt more output or a tiny fraction of a microvolt more sensitivity and then believe that any old antenna that allows contacts to be made is good enough--and indeed, that all QRPers should stick only to simple antenna systems. Like circuitry, there is no magic to antennas and feed systems; just careful application of fundamental principles. The first step is getting rid of those rules of thumb, like a resonant dipole length in feet is 468 divided by the frequency in MHz, and its unspoken corollary that this is somehow "better" than other lengths, and the connecting coax is somehow "better" than other feed systems. What makes these rules of thumb so dangerous is that they are somewhere close to the ballpark, but they are actually more wrong than right for most circumstances. Learn what is right for the exact circumstances you have. It can be done.

-73-

LB, W4RNL

From: JEVERHART@cayman.vf.mmc.com
Subject: [6591] Re: Rainbow Tuner"
Message-ID: <961217111551.2020ee0e@cayman.vf.mmc.com>

Jerry,

There's a good reason that you can't find ordering details yet on the Rainbow Tuner - it has not yet been annouced for sale! NJQRP will be handling the kit when it is ready. We are currently engaged in preparing for beta test and locating parts sources.

We expect to make our announcement before the end of the year and being taking orders starting about January 1. Once we begin taking orders, each order will be given a number and shipment will take place aome time in February by order number.

We don't want to start taking orders until we are sure that we will be able to ship the kits in a timely fashion.

Unfortunately we don't have NorCal's experience, so the project is not as streamlined as theirs! I swear that Doug must have more hours in his days than most people :-).

The Rainbow Bridge/Tuner will be introduced in articles in the December QRPP and the January QRP Quarterly, so even if you miss the announcement here, details will be given in those newsletters.

In keeping with the NorCal guidelines, the price will be \$25.00 each with a \$3.00 shipping charge. The kit will consist of the printed circuit board and all board mounted parts plus the LED indicators with their socket and connecitng cable. To build it you will have to provide a battery, the connectors, wire and a case. Naturally there will also be a manual with assembly and usage instructions.

I posted an outline of the manual here on qrp-l a couple of days ago. If you missed it, let me know and I will resend it to you privately.

72/73,

Joe E., N2CX

work: jeverhart@cayman.vf.mmc.com
home: n2cx@voicenet.com

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: Dan Hogan <dhhogan@lightside.com>

Subject: [6557] Re: Rick Campbell Info
Message-ID: <3.0.16.19961216194915.36171f6e@mail.lightside.com>

Rick:

Try <http://qrp.cc.nd.edu/kanga/kk7b.html>. It is Kanga US kit distributor site.

At 19:19 12/16/96 -0600, Influential Technologies Wrote

>

>Good Everning Fellow QRP'ers

>

>I am new to this list and I will watch and learn your ways as best I can.

>In the mean time I am hoping someone can help me with obtaining some

>information. I am searching for info, articles, etc... regarding the

>following:

>The R1, R2, T2, and Mini R2. I believe these are connected to Rick

>Campbell.

Dan Hogan
West Covina, CA
dhhogan@lightside.com

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: K4NK@aol.com
Subject: [6541] Re: Ten-Tec QRP delay
Message-ID: <961216192029_1987942547@emout03.mail.aol.com>

12-16-96

Also spoke to ten-tec today...Wayne says it will be mid jan. before the kits will be ready .They have put them on the back burner to complete regular Xmas orders.They also have a small sheet metal shortage.

Les K4NK

From owner-qrp-1@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: Rogerio Gonzaga <gonzaga@med.up.pt>
Subject: [6569] Re: TenTec Service?
Message-ID: <199612171056.LAA10122@hipocrates.med.up.pt>

Hi, Mark,

About your mail ...

>Date: Mon, 16 Dec 1996 14:22:06 -0500
>From: FACMSA@facilities.buffalo.edu (Adams, Mark S.)
>To: qrp-l@Lehigh.EDU ('QRP-L (Quality Radio Persons)')
>Subject: [6527] TenTec Service?
>Message-ID: <1996Dec16.152200.1483.36101@facilities.buffalo.edu>
>Mime-Version: 1.0
>Content-Type: text/plain; charset="US-ASCII"

>Hi Gang,

>I am one frustrated guy today. My Cubbie (Argo 556) is only putting out
>about a few milliwatts and I need some help from TenTec. But when I call
>615-428-0364, which I believe is their service #, all I get is busy
>signals! All day! Been trying since 0900 EST at 10 minute intervals.

>Is this normal? Is there another #?

>72 Mark N2VPK

... just try milliwatting in the interval - the hard-core QRP...

GD LUCK WITH TEN-TEC, GD XMAS, HAPPY NEW YEAR ES 72/73 DE
ROGER, CT1ETT

Rogério A. F. Gonzaga, MD
Surgical Professor at the Faculdade de Medicina do Porto - Portugal
Ex-Honorary Surgical Registrar at the Hammersmith Hospital - London, UK

Radio Amateur CT1ETT QTH Loc IN51re
G-QRP Club # 8673 ISWL # CT-20574 QRP-L #516

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: jim seeber <kw3u@warwick.net>
Subject: [6589] Re: TenTec Service?
Message-ID: <32B710A6.5924@warwick.net>

Adams, Mark S. wrote:

>
>
> Hi Gang,
>
> I am one frustrated guy today. My Cubbie (Argo 556) is only putting out
> about a few milliwatts and I need some help from TenTec. But when I call
> 615-428-0364, which I believe is their service #, all I get is busy
> signals! All day! Been trying since 0900 EST at 10 minute intervals.
>
> Is this normal? Is there another #?
>
> 72 Mark N2VPKI disn't see that fone # anywhere Mark.
their ad shows the following #s.
1-800-833-7373
office 423-453-7172
fax 423-428-4483
repair dept 423-428-0364
9am to 5:30pm est
hope this helps u 73 Jim kw3u

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: Cecil A Moore <Cecil_A_Moore@ccm.ch.intel.com>
Subject: [6552] Re: Tuners

>From: Dale LeDoux <dledoux@laci.net>
>The Handbook has schematics for pi and T layouts and component values
>to get you in the ballpark with stuff out of your own junkbox or the
>next flea market.

Hi Dale, let me put in my \$0.02 worth. A lot of people favor the 'T'
network because it will match a wider range of impedances. IMO, the
impedances that a 'T' will match and a 'PI' won't match are exactly
the impedances to avoid trying to match because of the losses involved.
I recommend building a 'PI' network and improving the antenna system
if the 'PI' network won't match it. Single coil 'PI' networks have
the advantage of near-zero losses when feeding a near-50 ohm load.
A single-coil 'PI' is an attenuator of harmonics where there is
little-to-no attenuation of harmonics in a single-coil 'T'.

73, Cecil, W6RCA, 00TC

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: "Dan Tayloe-P26412" <Dan_Tayloe-P26412@email.mot.com>
Subject: [6581] Re: tuners

Message-ID: <M28523704.014.kd72g.1.961217151915Z.CC-MAIL*/OU=SATCG/OU=AZBH/
PRMD=MOT/ADMD=MOT/C=US/@MHS>

On Sun, 15 Dec 1996, Richard Wilkerson wrote:

```
>>
>> We had in an issue of QQ, different configurations of tuners.  If
any
>> one remembers.. what issue was that?? thanks...rich
>> --
>> Rich Wilkerson WD6FDD, Santee, Ca.
>> NorCal, ARCI, Qrp-L, E.C.R.A.
>>         scQRPions
>>     *****Happy Holidays*****
>>
>>
```

I saw an old artical in QST that examined just this question. The
best configuration *****by far***** was a simple pi network.

rig -> var cap to gnd -> tapped series L -> var cap to gnd -> ant

This producted losses of 8 to 15%, whereas other configurations
produced much higher losses, 38% seemed more typical with up to 60%!!
(I am pulling these numbers from memory).

I use this configuration with my 500 ft horizontal loop on 40, 30, 20,
and 15 meters. Seems to work well.

I guess that is the real problem. You could be loosing 60% of your
power and the rig still *seems* to work well.

- Dan Tayloe, KK7BD, Phoenix, AZ, QRP1 # 696

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: PaulKB8N@aol.com
Subject: [6610] Re: Tuners
Message-ID: <961217165903_2052250417@emout07.mail.aol.com>

In a message dated 96-12-16 22:44:22 EST, Cecil_A_Moore@ccm.ch.intel.com
(Cecil A Moore) writes:

<< I recommend building a 'PI' network and improving the antenna system if the 'PI' network won't match it. Single coil 'PI' networks have the advantage of near-zero losses when feeding a near-50 ohm load. A single-coil 'PI' is an attenuator of harmonics where there is little-to-no attenuation of harmonics in a single-coil 'T' >>

Right on, Cecil! If 37 years of hamming have taught me anything, it is that Pi-Net tuners offer real advantages. I rarely had the RFI problems with tube gear that I have had with solid state gear, the biggest reason being the Pi-net output of the tube gear. Once I began using Pi-net tuners with my antennas, the extra bandpass filtering eliminated most of the RFI. You cannot find any old tube gear with anything that looks like a T-match, simply because that type of matching is neither efficient nor effective at transforming high plate impedences (5000 ohms) to low output impedences (50 ohms). The only advantage is that it can be built with smaller, cheaper components. 72, Paul

From owner-qrp-l@Lehigh.EDU Tue Dec 17 18:01:03 1996
From: Dan Halbert <halbert@BBN.COM>
Subject: [6602] Re: [6482] RE: Portable Receivers
Message-ID: <199612172005.PAA23134@halite.Diamond>

>Jukka's question is an interesting one. My general question is: Does
>anyone have any experience using some of these small portable receivers
>with a small stand alone QRP TX??

I cannot speak to use with a TX, but if you are interested in pages and pages of very good reviews of lots of shortwave receivers, from tiny portables to tabletops, check out the book "Passport to World Band Radio", a . The 1997 edition is already out. The reviews are of course aimed at SW listeners but are very useful for hams as well. You will find out which ones are single conversion, which ones have lousy sensitivity or selectivity, which ones have BFO's, etc., etc. The info is international, not just US-oriented.

Dan Halbert, KB1RT